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Combined 1st & 2nd Quarterly Circulars for 1956

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Rubber Research Institute of Ceylon

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Those who wish to visit the Institute are requested to do so after making an appointment. No special days are set apart as Visitors' Days and the services of the technical officers can be availed of for discussion or demonstration only by prior appointment.

PUBLICATIONS

Rubber Research Institute publications comprising Annual Reports, Quarterly Circulars and occasional Bulletins and Advisory Circulars are available without charge to the Proprietors (resident in Ceylon), Superintendents and Local Agents of rubber estates in Ceylon over 30 acres in extent. Advisory Circulars and Smallholdings Leaflets in English or Sinhalese will be available without charge to Smallholders on application. Forms of application can be supplied on request.

It will be appreciated if subscribers will return any back publications which are of no use to them.

ADVISORY CIRCULARS

The undernoted Circulars may be obtained on application at 30 cents per copy. Future issues in the series will be sent free of charge to estates and smallholders registered for the receipt of our publications:—

(5) Straining box for latex (January, 1940).

(6) Notes on the care of Budded Trees of Clone Tjirandji 1 with special reference to Wind Damage (September, 1938).

(12) Warm Air Drying House for Crepe Rubber (Reprinted 1952).

(19) Density of Planting and Thinning out (December, 1942).

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(58) Notes on Budgrafting Procedure (Superseding Circular No. 1) (December, 1955).

(59) Manuring of Rubber (Superseding Circular No. 37) (June, 1956).

*NATURAL RUBBER RESEARCH—TOO LITTLE AND TOO LATE?

By

E. D. C. Baptist

The Editorial to the Planters' Bulletin of the Rubber Research Institute of Malaya of March 1954 entitled "Can Research Save Natural Rubber" aroused considerable interest and earned a full page editorial comment in "World Crops" of August 1954.

The writer of the Planters' Bulletin editorial painted a gloomy picture of the future of natural rubber. He drew attention to the steady decline in the use of natural rubber and to the corresponding increase in the consumption of synthetic rubber in the U.S.A. during the previous five years, a state of affairs brought about by the enormous strides made as a result of the intensive research which has been proceeding on an increasing scale since the war-time development of the general purpose synthetic product known as G.R.–S.

The tempo of research may be expected to increase rather than to decrease since the sale in April 1955 of the U.S. Government synthetic rubber plants to private enterprise which already controls two thirds of the present productive capacity of the synthetic rubber industry.

In this connexion the Editorial of the "India Rubber World" of October 1953 quotes an American authority as stating "The best guess I can make is that after plant disposal the rubber industry will spend between U.S. $13 million and $15 million per year on synthetic rubber research".

It is worth recording here that, according to a well known authority, the synthetic rubber industry (U.S. Government and Commercial interests) in 1952 spent 6 per cent of its turnover on research whilst the natural rubber industry spent less than 1 per cent for that purpose. For Ceylon the corresponding figure is less than 0.5 per cent.

The production of "tailor-made" synthetic rubbers, each with its specific properties technically superior for certain purposes than those of natural rubber, has already resulted in the gradual displacement of natural rubber in a number of fields where, for example, resistance to heat, oils or petrol, impermeability to gas, etc. are of primary importance.

The admitted supremacy of natural rubber for heavy duty tyre service is being challenged by newly developed polyisoprene synthetic rubber, the so-called synthetic natural rubber exemplified by the Firestone Tire and Rubber Co. "Coral rubber" and the B. F. Goodrich Co. "Ameripol S.N." which have the same molecular configuration and the same physical and chemical properties as those of pure Hevea rubber.

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It is interesting to note in this connexion that in Liberia the Firestone Tire and Rubber Co. have developed 90,000 acres of Hevea out of their 1926 lease of 1 million acres whilst B. F. Goodrich Co. leased 600,000 acres in 1954 of which 350 acres have been planted.

This new "test-tube tree rubber" may be said to be the first true synthetic rubber in that it has all the characteristics of natural rubber. Its performance on test trucks and on fast long distance buses is equal to that of natural rubber which it can *replace completely* for heavy duty tyre construction, a feat which no previous synthetic rubber had been able to achieve.

It behoves all whose livehood depends on natural rubber to ponder over the implications of this new development and to ask themselves whether it would be a case of "research or repent" for the natural rubber industry.

The commercial development of the new synthetic natural rubber, now in the pilot plant stage will depend on economic factors, such as the cost of raw material, although B. F. Goodrich-Gulf Chemicals Inc. claim that Ameripol S.N. could be sold at the present price of synthetic rubber, and it may be influenced to some extent by the price and availability of natural rubber.

To quote from the Editorial of the leading American rubber journal the "Rubber World" of January 1956 "The Goodyear Tire & Rubber Co. has also announced the successful synthesis of polyisoprene with a molecular structure closely resembling that of natural rubber.

"The NSF Rubber Research Commission's report also states that "economic conditions may provide an environment under which commercial development of the new processes for making natural rubber substitute will move forward without governmental action". Goodrich-Gulf, Firestone, and Goodyear have informed Rubber World that they feel that there is no need of governmental help and that competitive free enterprise, if unhampered, will make the new polyisoprene rubber available in the shortest possible time . . . . .

"The government might contract to purchase a sizable tonnage of synthetic polyisoprene for the strategic stockpile at a price sufficient to enable the producing companies to expand their production facilities at a more rapid rate than they might normally do . . . . .

"In any event, it is the opinion of the editor of Rubber World that facilities for the production of at least 520,000 long tons yearly of synthetic polyisoprene should be built as soon as possible".

The present production of synthetic rubber, in countries outside the iron curtain, is about half that of natural rubber and the recent changeover to private industry in the U.S.A. may be expected to increase this production still further to about 1,100,000 long tons by the end of 1956.

Natural rubber is now in open competition with the synthetic product and its survival may depend on the acceleration of research work on problems of production and of consumption.

Increased expenditure on natural rubber research is essential (*a*) to lower the cost per pound of the raw product, by increasing the yield per acre with the widespread use of high yielding planting material possessing good secondary characters

of resistance to disease and to wind damage, by improvements in systems of planting, and of tapping, of methods of cultivation and of factory practice and (*b*) to increase potential sale of the product by an expanded and improved consumption research and advisory service and by a continued and accelerated examination of chemical modifications of the product to develop new outlets for natural rubber.

Only by a considerable expansion of fundamental and applied research can the full potentialities of natural rubber be developed in time for it to meet the challenge of synthetic rubber on equal terms.

Is it too late even now to achieve this end? Quoting from the editorial of the November 1955 issue of Rubber World "If established types of general purpose and special synthetic rubbers have captured two thirds of the American market and if a new synthetic rubber can replace natural rubber in truck and bus tires, is it not possible that current and future efforts of the natural producing industry to hold one third of the American new rubber market may be too little and too late?" This is a challenge to which the Natural Rubber Industry must face up or perish.

Countries which depend on natural rubber for an important part of their economy have taken up this challenge and have embarked on a vast replanting programme.

In Ceylon the Government Rubber Replanting Subsidy Scheme provides for replanting with selected high yielding material before 1960 of 150,000 acres of worn-out and uneconomic rubber areas at a rate exceeding 20,000 acres a year which, quoting from the Rubber Controller's report of the Scheme for 1955, "Measured as a percentage of our total rubber area is the highest of any rubber producing country in the world."

This energetic effort reflects great credit on the Rubber Replanting Advisory Board, more especially to its Chairman, the Rubber Controller, on the staff of the Rubber Control Department and, last but not least, the members of the Staff of the Rubber Research Institute of Ceylon who have advised on and assisted with the establishment of nurseries approved under the Scheme for the provision of high yielding planting material for use on small holdings. The Smallholdings Propaganda Department of the Rubber Research Institute with an increased field staff has been responsible for advice and practical help to small holders in all stages of replanting operations in accordance with the requirements of the Subsidy Scheme.

The replanted areas when they come into bearing are expected to increase Ceylon's total rubber production by nearly fifty per cent. These prospects are promising and encourage us to view the future of the Ceylon rubber industry with increasing confidence.

The outlook for Natural Rubber remains hopeful as long as the world's demand for rubber far exceeds the capacity of the synthetic plants, as long as it is produced at a competitive price and as long as the technical possibilities of the material are fully exploited by an expanding and effective consumption research service.

In this connexion it is comforting to note that the world rubber consumption is predicted to reach 4,000,000 tons annually by 1965, an increase of more than 1,000,000 tons on the total production of all rubbers in 1955.

BUDWOOD NURSERIES

By

C. A. de Silva

Location and Layout

"Deniya" types of land can be used for permanent budwood nurseries, if such areas can be efficiently drained to a depth of 4 feet, without being waterlogged.

On flat land the beds can be lined to take 4 rows of planting, without any difficulty. On sloping land dead level contour beds should be marked out to take two or more rows according to the spacing given later in this circular. On steep land it will be necessary to decrease the width of the beds. It is best to level the beds starting from the top and working downwards. The contour platforms for beds are made at a gradient of about 1 in 80 towards the bank.

The edges of the banks should be cut on a slope and planted with grass and a drain 1 foot wide and 1 foot deep should be cut at the back of each bed, preferably with silt pits at intervals. On flat land such drains will come within suitable intervals of about 14 feet occupied by three nursery beds as in fig. 1.

In large nurseries, especially on flat land, 3 feet wide paths should be provided at suitable intervals to facilitate inspection and for adequate aeration of the closely planted rubber.

Preparation of Beds

In opening up a nursery in virgin jungle it will be necessary to remove all stumps and roots to a depth of about 2 feet; no further forking will be necessary.

In areas without tree roots, forking down to about 2 feet will also be necessary. In "deniyas" forking down to 1½ feet will be sufficient.

A convenient width will be about 14 feet, which allows for 4 rows spaced 3 feet apart and a 2 feet margin on either side, with a 1 foot drain space where necessary. The planting points in the rows will be 4 feet apart. On sloping land beds are normally prepared on the contour to take two or more rows of planting points with sufficient space to have a 2 feet margin as indicated earlier.

The rows spaced 3 feet apart and the planting points marked 4 feet apart on the quincunx system is recommended for facilitating point to point attention and budwood cutting, as shown in fig. 1.

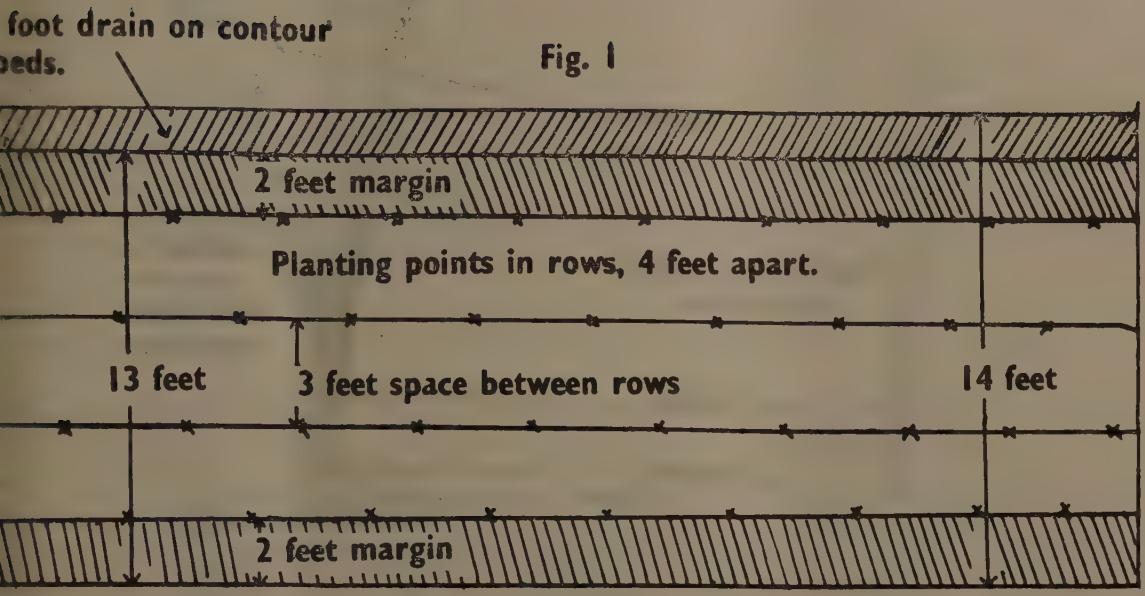


Fig. 1

The spacing in fig. 1 is for the more permanent type of nurseries, which will be retained for two or more crops of budwood at intervals of 18 to 24 months. A temporary nursery for a single crop of budwood can be spaced with planting point $1' \times 1'$ or $2' \times 2'$ according to the space that is available.

As an alternative method on land with an appreciable slope, that is steeper than 1 in 20, planting points can be provided for by trenching along the contour 1 foot in width by 2 feet in depth and planting 3 feet apart in the trenches filled with good top soil without stones, if available. This form of trenching is best started from the bottom of the slope, while the top soil is scraped from the land immediately above. The contour planting rows should be spaced 4 to 5 feet apart. The wider spacing will help later in giving the necessary aeration and the ease for isolating the various clones used for multiplication on steep land.

A ground cover on the slopes and even on the nursery beds in the very wet low country districts will be useful for soil conservation. A non-creeping ground cover like Desmodium ovalifolium will be satisfactory. Stylosanthes gracilis is not satisfactory owing to its very vigorous growth and erect growing habit under partial shade. In large contour beds with adequate drainage a ground cover on the beds is hardly necessary.

Planting and Planting Material

Planting can be done with budded stumps or by planting 2 to 3 seedlings per planting point and budding in the nursery. The best grown seedling can be budded for budwood development, and other good budgrafts can be used for supplying points with poorly grown stocks.

For registered budwood nurseries, which are expected to supply authenticated planting material it is essential to adopt the following precautions against any possible confusion in the future.

FIG. 2

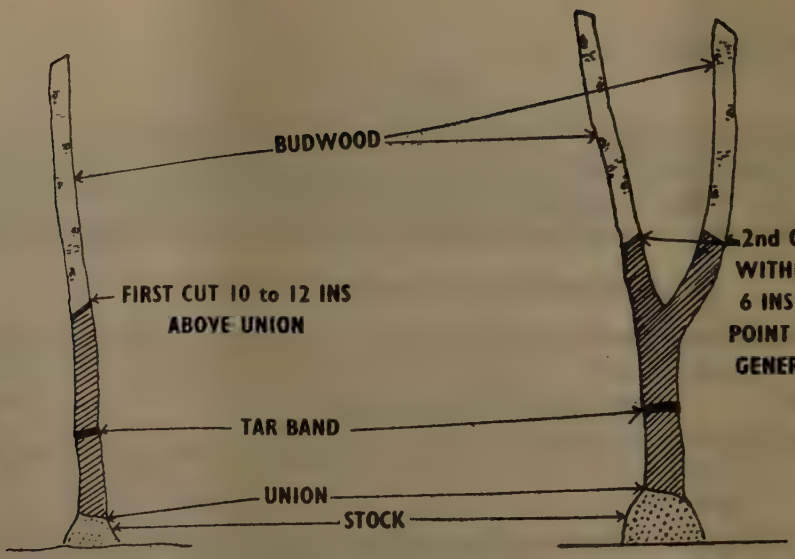


FIG. 3

FIG. 4

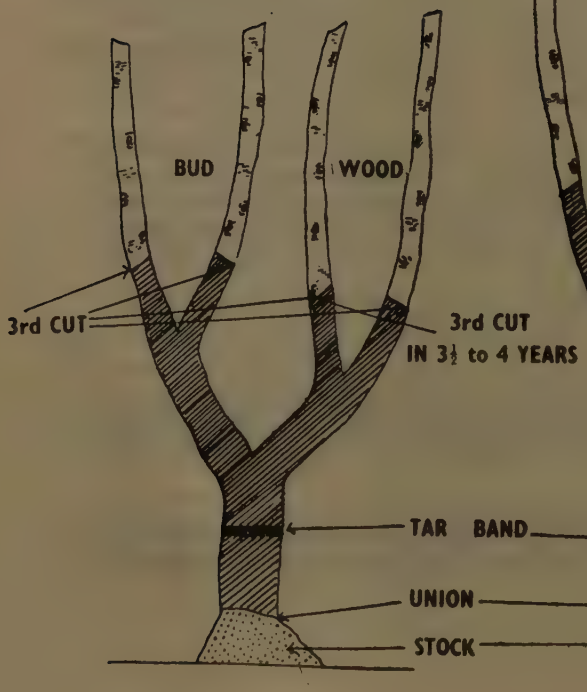


FIG. 5

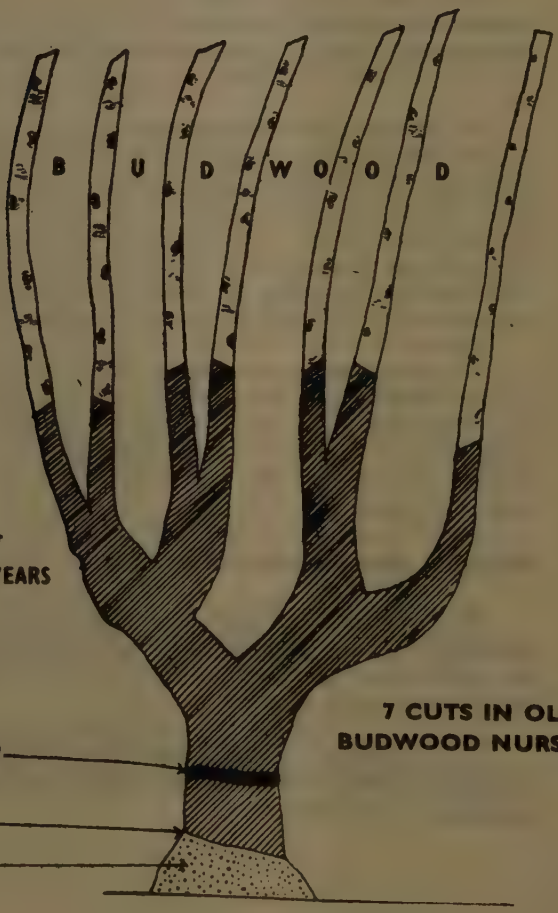


FIG. 6

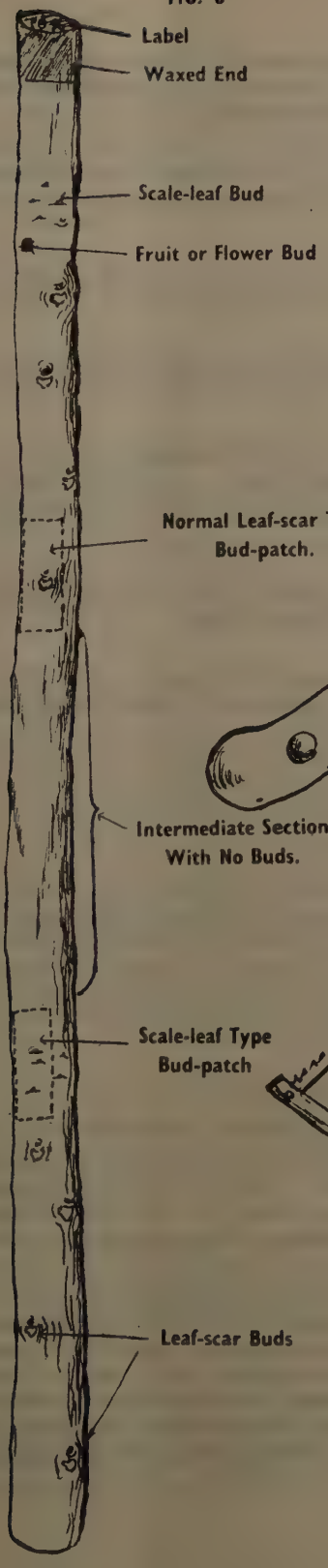
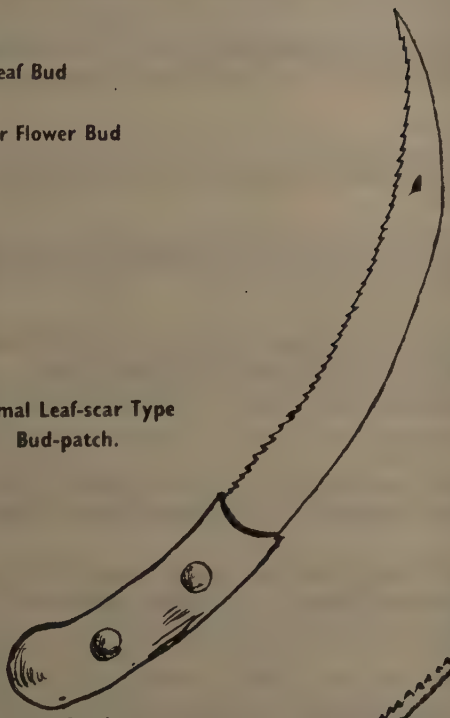
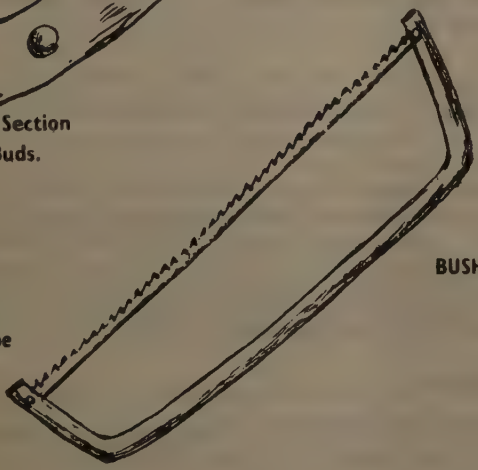


FIG. 7



HAND PRUNING SAW

FIG. 8



BUSHMAN'S SAW

(1) Budgraft the original authenticated clonal material in a separate section of the stock seedling nursery, and carefully label each stock with the budded clone for transferring later into the budwood nursery as budded stumps.

(2) Surround each block or section of a block, in a budwood nursery planted with a particular clonal material, with two strands of plain galvanised wire on iron or hardwood posts.

(3) Separate access should be provided for each clonal block or section of a block with a gate or stile.

(4) At each gate or stile the correct nomenclature of the clone should be displayed with permanent letters on a board.

(5) On no account should more than one clone be included in a block or section as described above. A labourer cutting budwood or initially introducing budded stumps of a particular clone cannot then walk accidentally from one block to another.

(6) The practice of overbudding existing clones in a budwood nursery partly with new clones is most risky even with the best of supervision.

(7) A plan of a nursery with the planting points of each clone correctly numbered should be made and kept in the office responsible for handling the budwood in the future.

If possible the cutting of budwood from various points should be recorded with the date and number together with the clearing in which the budded material is planted.

In the case of registered nurseries the name of the consignee for the budwood should be recorded together with the date of delivery and other useful information for future reference. *It is necessary to stress the importance of obtaining authenticated material for the initial introduction of clonal material into budwood nurseries. Mistakes made in this connection will ruin the usefulness of the nursery and may in the future result in financial losses in many areas planted with incorrect planting material.*

Care of Budgrafts

The rules for the general care of budgrafts are equally applicable to budded stumps in a budwood nursery. All lateral shoots, if they appear, should be pinched off while still in a tender stage up to a height of 7 feet. Such side shoots will rarely appear in a closely planted budwood nursery, if one ensures that the terminal elongation is normally active by correct cultural operations. Every lateral bud which sprouts is a bud lost in the budwood for grafting.

The diseases of any importance are firstly a possible dieback of the budshoots due to Phytophthora palmivora, which during the susceptible period can be controlled by the preventive applications of a copper fungicide as a spray or dust, secondly root diseases which can spread quickly owing to closely planted rows of plants. Any area, therefore, with a previous history of root disease should not be initially selected as a nursery site, unless such diseases have been completely stamped out by control measures over a period of years.

Manuring

There can be no hard and fast rules for manuring budwood nurseries. The treatment will depend on conditions of growth of the nursery plants. The aim should be to develop the maximum quantity of good budwood per plant during periods of 12 to 18 months, with an initial period of 18 to 24 months for the first crop of budwood.

Recommendations are given below for a scheme of manuring, with the essential precautions for developing satisfactory budwood with good budgrafting qualities.

(a) *Initial application for preparation of beds.*—A dressing of rock phosphate (saphos) and dolomite (magnesium lime) can be applied at the rate of 4 cwts. per acre.

(b) *First crop of budwood.*—The first crop of budwood can be expected after 18 to 24 months' growth. An N.P.K. mixture such as the R 4:6:5 mixture can be used up to a total quantity of $\frac{3}{4}$ lb. per planting point, according to the total period available for manuring. Owing to the close planting in budwood nurseries, manuring at the rate of 2 oz. per plant should be made at three-monthly intervals, noting the general precautions given later on manuring. Applications can be made by dibbling in the manure to within 6 inches of the stocks, commencing the first manuring when the second whorl of leaves of the budshoot has matured.

(c) *The second crop of budwood.*—Approximately 6 to 8 yards of budwood can be developed on two stems in 12 to 18 months. A dose of 4 oz. per plant of the N.P.K. mixture will be sufficient at intervals of 3 to 4 months up to a maximum quantity of 1 lb. per plant for the longer period of growth.

An organic manure can be used together with the inorganic fertiliser in place of (b) and (c), especially in backward nurseries, by replacing half the quantity of the inorganic fertiliser with an organic manure such as animal meal, for example, a 4 oz. dose for the second crop of budwood will get 4 oz. made up of 2 oz. of the R 4:6:5 mixture plus 2 oz. of the organic animal meal.

For the third and fourth crops of budwood, comparatively larger quantities can be used, retaining 4 to 6 stems per plant. A dosage of more than 6 oz. of an inorganic mixture on a per plant basis should not be exceeded in a single application.

The plants in all cases should not be manured within 3 months of cutting budwood and 3 months after cutting budwood. The aim should be to produce budwood with good peeling qualities, with the maximum quantity of food reserves in the budwood and stocks at the time of budgrafting.

The plants should be growing well, that is, the new leaf whorls should be in an active state of development at short intervals. When the terminal bud becomes permanently dormant owing to poor growing conditions. the chances of successful budgrafting with budwood cut from such plants is lowest. The same applies to stock conditions in nurseries.

While a general active state of growth is desirable, a sudden flush of vigorous growth which temporarily depletes the food reserves is not desirable just before budgrafting, hence the precaution not to stimulate such growth by manuring close to the budgrafting period.

"Types" of budwood and buds for grafting

As far as the correct propagation of clonal material is concerned, budwood can be taken from an authenticated clone, irrespective of the age and conditions of growth of the particular clonal trees. Such factors cannot affect the authenticity of a particular clone, which is dependent on its hereditary characteristics.

Budwood can be cut from budwood nurseries or from regenerating branches of the oldest trees of a particular clone, even those with root disease, or from the original mother seedling tree of the clone from which it was first established, provided the material has the qualities of good budwood. In general it is more difficult to obtain satisfactory results from old trees unless good quality budwood is developed by pollarding trees in the field, and improving the growing conditions with cultural operations and adequate manuring. It is essential that the old trees are correctly identified as true to type in keeping with the required clone before budwood is cut.

The above procedure for obtaining budwood is not recommended except in a case of extreme emergency, and it is not permitted under the Government Rubber Replanting Scheme.

Fig. 6 on page 7 gives a sketch of a yard of budwood with the disposition of the various "types" of dormant branch buds, which can be taken on a budpatch for grafting.

(1) *Scale Leaf Buds.*—These are placed uppermost and are closely placed with scale-leaf scars faintly marked. Under certain conditions these "blind" buds can develop a whorl of side shoots. Budpatches taken off these areas are quite suitable and will often produce more than one shoot from a successful graft. Such budpatches are particularly useful for crown-budding, where the first budshoot can be easily damaged by wind.

(2) *Leaf-scar Buds* are found in the axil of leaves. These are placed further apart than scale leaf buds, irregularly according to the arrangement of leaves in whorls characteristic of each clone. The leaf scar is more prominently marked, and the protuberant bud just above the scar is more obvious. The leaf-scar buds will make up the major number of bud-patches on a yard of budwood.

(3) *Fruit or Flower Buds.*—In exceptional cases in the region of the scale-leaf buds there may be one or two 'flower' or 'fruit' buds on budwood. These are clearly distinguished from (1) or (2) above as depressed ring shaped areas, where the dormant protuberant leaf-scar of scale-leaf bud is found. Such buds are useless on a bud-patch.

Number of Buds per Yard

15 to 20 buds can be taken off a single yard of budwood. Expert budders have taken up to 30 bud-patches off a single yard. The number of such buds will depend on the method of cutting a yard of budwood and on the particular clone.

With good budders it is possible to obtain an average of 12 successful budded stumps per yard of budwood. A more conservative estimate, when calculating the amount of budwood required for a comprehensive planting programme, will be 10 successful budded stumps per yard of budwood. Some clones are more difficult to bud than others.

The Cutting of Budwood

Budwood sticks of 1¼ to 1½ inches in diameter are the best for convenient and successful budgrafting. In exceptional cases budwood of up to 2½ inches in diameter can be successfully used. In such cases bud patches should be narrower to fit in with normal size stocks, 1½ to 2 inches in diameter. The budwood should have brown bark with sufficient development of corky tissue, which gives it the mature appearance.

To prepare budwood from stems which still have the foliage, the leaves should be cut off at the base of the leafstalk, about a week before cutting the budwood. Such budwood is satisfactory for budgrafting locally without long distance transport within a few days of cutting the budwood.

Normally budwood should not be cut until there is brown bark at a height of 6 feet. The budwood should be cut for the first time with a saw to within 10 to 12 inches of the union making sure that there are 2 to 3 buds within 4 to 5 inches of the cut end, from which growth may be renewed. The cut is made at an angle of 45°. Prior to cutting budwood a ring of tar should be painted on every plant 6 inches above the union. *No shoots should be allowed to appear below this tar band, this ensures that no stock shoots are used at any time as budwood.* (See Fig. 2 on page 6).

A hand pruning saw or a "Bushman's" saw with fine teeth as given in Figs. 7 and 8 on page 7 is satisfactory for cutting budwood without damaging the cut ends. The cut end on a plant should be treated with a disinfectant; tar is suitable. The applications should be strictly confined to the exposed wood only, and should not be indiscriminately daubed on the bark at the edges.

The general treatment of plants in budwood nurseries is indicated in Figs. 2 to 5 on page 6.

From the cut end of the stem after the first crop of budwood has been taken, two buds are allowed to develop preferably on opposite sides. These in turn should not be allowed to branch under 6 to 7 feet height from the point of regeneration. Side branches are, however, rarely encountered in closely planted budwood nurseries.

When the two stems are cut back for budwood, a sufficient length of stem up to 6 inches from the points of the last regeneration should be kept for developing the next crop of budwood. Four shoots are allowed to develop, two on each stem, which will provide 12 to 15 yards of budwood in 12 to 18 months.

Budwood nursery trees in the final years will produce from 6 yo 7 stems for budwood. 25 to 30 yards of good budwood can be cut per tree in the 5th year. After 5 years budwood nurseries should be replanted with fresh material.

Old budwood which has not been used for over 2½ years, should be cut back for regeneration of fresh budwood.

Labelling of Budwood

Whatever length of budwood is cut, the cut ends should be immediately marked with the clonal nomenclature; generally the clone name and number. This is essential when more than one clone is used on the same day on an estate. An indelible pencil is most useful for marking the cut ends which are moist.

In order to preserve the budwood for several days transport, the cut ends should be dipped in warm liquid paraffin. For local transport or despatch overseas budwood can be conveniently cut into one yard lengths.

Packing of Budwood

For local transport by rail budwood can be covered with plantain sheaths or moist coconut fibre. Bundles of 10 to 12 sticks of budwood can be further protected with more plantain sheaths or coir-fibre. A final covering of jute hessian completes the packing for transport.

For local transport within a single estate, budwood can be covered with a creeping cover, which protects the buds sufficiently for transport over fair distances.

For overseas transport the packing of each stick in moist coconut fibre, with excess fibre for packing several layers of budwood has proved quite successful. Light wooden boxes will be essential as a final protection for safe transport by sea or air. Overseas transport is covered by regulations laid down by the Government agricultural authorities of various countries with regard to pathogenic diseases, which may be carried on the budwood from one country to another. Sulphur is normally used as a fungicidal dust on the budwood before packing.

Storage of budwood

Good mature budwood can be preserved for several days, when a large consignment is received for budgrafting over several days. One end covered with paraffin can be cut off and the cut end embedded in moist sand or water up to a depth of 1 to 2 inches in a shaded spot, away from the direct sun. If the water is changed daily budwood can be kept for a week. It is, however, possible in most cases to arrange for supplies according to the budgrafting programme, which calls for the shortest period of storage before use.

GIRTH AND GROWTH MEASUREMENTS AS AN AID TO MANURIAL DIAGNOSIS IN HEVEA BRASILIENSIS

By

D. H. Constable

During 1955 the writer was privileged to present a paper on the above subject to the Tropical Section of the 14th International Horticultural Congress in Holland.

By kind permission of the Congress Committee this paper is being reprinted in a Bulletin.

Much of it however is of interest mainly to Research Officers and the present article is intended to present its use in a practical form to the planter.

Briefly the intention is to provide the planter with some definite standards of growth and a straightforward means of turning this into manurial needs.

Two tables are provided: Table 1 records briefly what we actually found by uprooting trees of all ages, girthing, weighing and analysing them. In addition the girth figures for age represent the averages of all the better (not just the best) girths which we have recorded both at the R.R.I.C. and on commercial estates. Fuller details are given in the original paper.

Table 2 presents this data in a usable form for the practical planter.

Firstly to describe how the data are to be used for a young (1-7 years) planting. An average clearing girth is required: to obtain this enter the clearing and mark a tree preferably permanently. Now take the nineteen *nearest* trees, mark those and take girths on all twenty trees in the usual way, recording in a convenient manner (to the nearest $\frac{1}{2}$ inch is ample). Call this a Group. Next move some distance, mark another tree and repeat the process. This gives a second Group. Repeat this process to give *at least* five Groups. If the clearing is over 10 acres in area do one Group for every two acres of it. Now to use the figures obtained. First total up each Group separately and divide the totals by 20. This gives you a number of Group Averages.

Add all these together and divide by the number of Groups. This gives the Clearing Average. Now first compare the Group Averages with the Clearing Average and if any one Group is 20 per cent below the clearing average go back to that Group in the field and check up further to see if you have a particularly bad area which needs special treatment.

Example I

Group Averages are $5\frac{1}{2}$, $4\frac{3}{4}$, 6, $5\frac{1}{4}$, $3\frac{1}{2}$

Clearing Average $5\frac{1}{2}$ plus $4\frac{3}{4}$ plus 6 plus $5\frac{1}{4}$ plus $3\frac{1}{2}$ divided by 5

that is $\frac{25}{5} = 5$ inches

80 per cent of 5 inches is 4 inches so then the 3½ inch Group is badly below size and that area should be checked further.

The next step, having obtained the Clearing Average is to check the per tree application of manure since the clearing was opened. Armed with these two figures, *i.e.* Clearing Average and Manure applied we go to Tables I and II. In Table I look up the age of the clearing and read off the expected girth. If your Clearing Average is as good or better than this figure then the clearing is satisfactory while if the Clearing Average is 10 per cent below the Table figure then it is likely to be definitely unsatisfactory.

Example II

Age of Clearing 2 years
Clearing Average 6½ inches

Expected Clearing Average 6 inches (from Table 1, columns 1 and 2).
Therefore the growth is satisfactory.

Example III

Age of clearing 4 years
Clearing Average 12 inches

Expected Clearing Average 13 inches (from Table I columns 1 and 2).
Therefore the growth is questionable though not 10 per cent undersize; some improvement in the condition of the clearing is needed.

Example IV

Age of clearing 3 years
Clearing Average 8 inches

Expected Clearing Average 9½ inches (from Table I columns 1 and 2).
Therefore the clearing is definitely backward and drastic measures are called for.

Now we will show how manurial information may be obtained from each of the examples above.

Example IIa.—Data as in Example II—manure applied 1 lb. per tree (½ lb. each year). From Table II a girth of 6½ inches equals 1¾ lb. of R 4:6:5 *approximately*. But only 1 lb. has been given so the soil has contributed the equivalent of *at least* ¾ *lb.* of manure. Therefore it may be assumed that the soil is supplying 50 per cent of the plants' nutrient and manuring may proceed on the basis of using ½ the quantities suggested in column 5 of Table I.

Example IIIa.—Data as in Example III, Manurial applications 4½ lb. (½, 1, 1, 2 lb.).

From Table II a girth of 12 inches is equivalent to 8 lb. of fertiliser while Table I gives us that the girth should have been 13 inches equivalent to 9 lb. of fertiliser. Further, at the end of another year the girth should be 16½ inches equivalent to 16 lb. of fertiliser. Therefore, the tree has to take up a further 8 lb. (equivalent) of nutrient during the next 12 months. We have already seen that the soil only contributed 3½ lb. out of the first 8 lb. taken up by the tree, so it would be advisable to budget for manuring at the rate of 5 lb. per tree in the succeeding 12 months at the end of which the trees will be measured again to check what degree of success has been obtained.

Example IVa.—Data as in Example IV. Manure applied 2 lb. ($\frac{1}{2}$, $\frac{1}{2}$ and 1 lb.). From Table II a girth of 8 inches is equivalent to $2\frac{1}{2}$ lb. manure. Of which 2 lb. has been supplied so the soil fertility is ovbiously low. The girth at the end of 4 years should be 13 inches equivalent to 9 lb. of fertiliser and of which $2\frac{1}{2}$ lb. are already present so a further $6\frac{1}{2}$ lb. will be needed in the course of the year. Safety would dictate that 6 lb. of fertiliser should be applied in this period since the soil cannot be relied upon to provide very much of the nutrient needed.

The figures of this last example have been chosen deliberately to illustrate a bad case. Planters may ask whether the application of 6 lb. of manure in the 4th year of growth would be economic. The only possible answer to this is whether it is less economic to apply such large quantities or to have a clearing of PB86, which yields less than 1,000 lb. per acre per year (as one third of the present mature plantings do).

Discussion

In the foregoing section we have given practical instructions as to how the planter may determine the state of growth of his plantings and where necessary take steps to improve the manurial programme.

Now the first question is "will more manure really improve the clearing?" Unfortunately we cannot give a positive answer to this question. What we do know is that at present we have no reason to suspect either pests or diseases of causing poor growth in immature Hevea plantings. Which leaves only nutrition (including waterlogging) as a factor likely to influence growth or the lack of it.

Next we may consider the use of Table I in formulating manurial programmes. Column 3 gives the average weight of healthy trees year by year. Since we know exactly the percentages of the various nutrients in normal rubber tree tissues we can translate these weights into an equivalent amount of fertiliser and this is done in column 4, while column 5 records the yearly differences, *i.e.* the approximate equivalents (as R 4:6:5) of the nutrient taken in each year. The figures of column 5 then represent what the tree roots *must* obtain in each successive year. Some of this will be obtained from the fertility of the soil; the remainder must be supplied as manures (artificial or organic). One of the major problems of Agricultural Science is to determine how much nutrient the soil can contribute, this contribution being described as *available.* It is generally a very simple matter to determine the *total* nutrient present in a soil but this *total* value rarely gives any clue to the *available* amount and much scientific work is devoted to finding methods of analysis which will determine only that proportion of the nutrient which is available. The difficulty of doing this can be better understood when it is mentioned that different plant species have been shown to extract different quantities of *available* nutrient from the soil.

How does this affect us with *Hevea*? Firstly, we have not advanced very far with the problem of determining *availability* where *Hevea* is concerned, due principally to the many complications of dealing with perennial crops as compared with annuals. However, we have one useful piece of evidence which is that smallholdings which in the past have received little or no manure generally make about 50 per cent of expected growth. We may therefore take it that under Ceylon conditions the soil is unlikely to supply more than half the nutrients needed by the tree. Now column 5 of Table I gives us the totals needed year by year so making an assumption of not more than 50 per cent soil fertility and adding a safety margin onto the earliest years we might formulate as a manurial programme:

First year ½ lb.
Second year 1 lb.
Third year 1 lb.
Fourth year 2 lb.
Fifth year 4 lb.
Sixth year 4 lb.
Seventh year 8 lb.

These quantities are under active test in our new manurial experiments which are situated at several points up and down the country, so they must not be taken as official recommendations. They do, however, form a basis for estates to carry out their own experiments if so inclined.

Summary

Data have been provided in an easily read form together with instructions for use that will enable planters to critically examine the growth of their young plantings. In the event of this growth appearing unsatisfactory the data can be used to give estimates of soil fertility and decide on a future manuring policy, manuring being the only growth controlling factor which the planter may expect to be able to influence.

Conclusion

The method set out above is necessarily tentative. It is not, of course, possible to treat plantings in the field with the same precision as can be employed in the laboratory. Nevertheless this does provide a practical approach and a feasible answer to the question "what is the fertiliser needed by a tree at such-and-such a stage of growth".

TABLE I

Data on age, girth, weight and nutrient equivalents for Hevea brasiliensis.

Age in years	Girth in inches expected at the given age	Wt. of tree in lb. corresponding to the given girth	Wt. of nutrient as R4:6:5 corresponding to the given tree weight	Yearly increment in nutrient as R4:6:5
1 yr.	2½ inches	5 lb.	approx. 1/5 lb.	approx. 1/5 lb.
2 yrs.	6 "	35 lb.	" 1¼ lb.	" 1¼ lb.
3 "	9½ "	95 lb.	" 4 lb.	" 2½ lb.
4 "	13 "	225 lb.	" 9 lb.	" 5 lb.
5 "	16½ "	400 lb.	" 16 lb.	" 7 lb.
6 "	20 "	600 lb.	" 24 lb.	" 8 lb.
7 "	23½ "	900 lb.	" 36 lb.	" 12 lb.
14 "	30½ "	1600 lb.	" 64 lb.	" 24 lb.
20 "	36½ "	2500 lb.	" 100 lb.	" 36 lb.

Table 11

Nutrient Equivalents of girths in one inch increments

Girth in inches	Expected age	Nutrient Equivalent as R4:6:5 approximately
2	1 yr.	1/6 lb.
3		1/3 lb.
4		½ lb.
5		¾ lb.
6	2 yrs.	1½ lb.
7		2 lb.
8		2½ lb.
9	3rd yr.	3½ lb.
10		5 lb.
11		6 lb.
12		8 lb.
13	4 yrs.	9 lb.
14		11 lb.
16		15 lb.
16½	5 yrs.	16 lb.
18		19 lb.
20	6 yrs.	24 lb.
22		28 lb.
23½	7 yrs.	36 lb.

SULPHUR - DUSTING OF RUBBER SMALLHOLDINGS IN 1956

By

W. I. Pieris

Introduction

Following the satisfactory results of the Trial Sulphur-Dusting Scheme carried out in the Kegalla District in early 1955 and the information gathered therefrom (vide Rubber Research Institute Circulation Paper No. 1891 of 14-5-55), the Government decided to extend the facilities available to smallhoders for protecting their Rubber against Oidium in 1956 and placed 12 Dusting Machines at the disposal of the writer for the purpose. This number was subsequently increased to 16 machines to meet the demand.

Organisation

Both on account of the limitations of departmental staff available for the daily supervision of dusting and the need for gradually training small owners to carry out their own dusting, the scheme this year had necessarily to be organised on slightly different lines to last year's. In broad outline it consisted of the dusting machines and essential supervision (part-time) being supplied free of charge, while owners were required to form themselves into co-operative "groups" and carry out the work themselves, thus bearing more or less all other expenses on a co-operative basis. In this respect, therefore, the organisation was different to that of last year, when the dusting was done throughout by departmental staff with part of the cost contributed by the owners.

The formation of "groups" of interested Rubber small owners with their lands situated within the dustable range of a single dusting-machine is undoubtedly the most difficult part of a dusting scheme of this nature and work was started in September 1955. Details of the scheme were explained in Dusting Leaflet A (Annexure 1) which, with Application Form B (Annexure 2), was circulated through Rubber Instructors of the Rubber Research Institute to smallholders in all the main Rubber districts. Leaflets and Application Forms were printed both in Sinhalese and English. Instructors also explained the scheme to smallholders individually and collectively by arranging meetings. Although the intention was that smallholders should form dusting groups on their own initiative, in actual practice this responsibility fell almost entirely on the Rubber Instructors who had to devote much time to explain the scheme, summon meetings and form groups.

The scope of the scheme was limited to Rubber plantations of under 100 acres, but preference was given to those of under 30 acres. A dusting group consisted of owners of such lands which, by their situation, distance from each other and acreage, could be dusted with a single dusting-machine operating from about 6 to 9-30 a.m. on 6 days of the week. Each group, in consultation with the local Rubber Instructor, elected its own "Organiser" who was authorised to manage affairs on behalf of his group, collect funds, communicate with the Department etc. He was also required

to make necessary arrangements for labour and transport to carry the machine, take charge of and safely return the machine, distribute sulphur to each holding etc. It must be explained, however, that the manner in which each Organiser actually fulfilled these honorary responsibilities varied greatly. Some were most enthusiastic and took a keen interest throughout, while others were apathetic and only concerned with the dusting of their own lands. Where the Group Organiser turned out to be of the latter type, the brunt of his duties had to be undertaken by the Rubber Instructor.

Each member of a group who wanted his land dusted had to submit, through his Group Organiser and the Rubber Instructor, a separate application. Each Organiser collected and forwarded all his members' applications together. Although only 12 dusting machines were originally provided by Government, applications were received in respect of 16 dusting groups which complied satisfactorily with the requirements of the scheme and, therefore, 4 additional machines were supplied. A certain number of applications where dusting groups to justify the allocation of a machine could not be formed, had to be rejected and one group which applied was dropped for failure to remit payment.

In forwarding the applications of a particular group, each Rubber Instructor submitted a rough map showing the situation of holdings to be dusted and dividing them usually into 6 "sub-groups". Each sub-group only contained as many holdings as could be dusted in one day, so that a group generally had dusting on 6 days of the week. Applications closed on 15th November, 1955.

Deposit

Soon after the provisional acceptance of applications from each group, a deposit of Rs. 15/- per acre was collected from each applicant, through his group, against the value of dusting sulphur to be supplied by the Department. Sulphur was purchased from C. W. Mackie & Co. and supplied at the cost price of Rs. 450/- per ton. No application was finally accepted for dusting until the deposit was paid. Unlike in 1955, only one group defaulted in payment.

Sulphur and Machines

The cost of sulphur for dusting one acre, on the basis of 5 dusting rounds of 12 lbs. each, worked out at just over Rs. 12/- and the balance money was accordingly refunded to each owner, through his group, at the conclusion of dusting and after the dusting machine was safely returned.

Transport of sulphur from Colombo was on owners' account, but the despatch of machines both to and from each group was done by the Department. The Department also supplied 2 bags of sulphur free to each group for purposes of training demonstrations and paid for their transport. All other expenses were met by the groups, whose members shared costs on a co-operative basis.

As soon as the total deposit money due from a group was received, the full quota of sulphur required for dusting all its holdings was despatched, together with the 2 extra bags for training. Sulphur was issued to each group @ 60 lbs. for each acre to be dusted, *i.e.* for 5 dustings at 12 lbs. per acre per dusting. A total of 889 cwts. (44 9/20 tons) of sulphur were issued. The sulphur, on being received by the Organiser, was distributed beforehand to each owner according to his acreage, so that it would be ready when required.

Dusting machines, which consisted of 12 new Kestrel machines and 4 new Mistral IIA machines, were also issued to the Organiser of each group, subject to his signing an agreement for the safety of the machine (Annexure 3). The nett cost of a Kestrel machine was Rs. 1,400/- and of a Mistral Rs. 1,520/-.

Training

Training of the labour and supervisory staff appointed by each group for operating and carrying the dusting machine was begun immediately thereafter by the field officers of the Rubber Research Institute by means of a series of dusting demonstrations conducted on different types of holdings, at which Group Organisers and members were present. By this means all was more or less ready for starting dusting when the correct stage of refoliation was reached.

The local Rubber Instructor, under the close supervision of his District Field Officer and Assistant Propaganda Officer, was responsible for the supervision, training and conduct of operations in his group, and detailed instructions and sometimes demonstrations were given to them by the writer on what exactly was required to be done.

Dusting

Wintering occurred earlier than usual and the first holdings were dusted in the Undugoda and Kuruwita ranges as early as 24th December, 1955, which happened to be a statutory holiday. Officers who had to be on duty on such days were given lieu leave later. A sharp look-out was kept during December and dusting was started as soon as 10 per cent of the trees in a holding had just begun to refoliate, *i.e.* show tiny brown sprouting leaflets. Each holding was normally given 5 dustings at regular weekly intervals, at the end of which period most of them had matured their foliage sufficiently to stop dusting. Some holdings in which wintering was uneven were given 6 and sometimes 7 dustings, but the quantity of sulphur used did not usually exceed 60 lbs. per acre as the dose per dusting was regulated according to the actual proportion of trees that were ready at the time. The last date of dusting was 21st March, 1956 when all work was concluded.

The first round of dusting in each holding in a group was personally supervised throughout by the Rubber Instructor, District Field Officer or Assistant Propaganda Officer in charge, in the course of which any finishing touches to the training of the dusting staff were given. Where the staff was found to need further guidance, the second and sometimes the third rounds were similarly supervised. Thereafter departmental officers maintained general supervision by visiting holdings at random during dusting hours, without devoting their full time to this work.

In some groups one set of labourers operated throughout, while in others where the sub-groups were more distantly situated two or more sets functioned as necessary. As the day's dusting was usually over by 9-30 or 10 a.m., there was ample time in the afternoons for transporting the machine to the next sub-group for early dusting the following day. Owners were invariably present during the dusting of their own holdings, which was of assistance to the Rubber Instructor and Group Organiser in seeing that the work was properly done. Usually a set of 3 labourers was used for the Kestrel machine and a set of 5 for the Mistral. Of these numbers, 2 and 4 respectively carried the machine while the extra man manipulated the machine and acted as relief. After a few rounds the men became competent in operating the machine, but to ensure highly efficient dusting and correct movement of the machine according to wind etc. some sort of trained supervision is desirable. However in a scheme of this kind there is no reason why this could not be undertaken by the owners themselves who could in a short time acquire proficiency in the technique, as paid supervision is likely to be costly.

Transport of the machine to holdings was usually done by car, except where holdings were within walking distance. Local cars were usually hired at reasonable rates for the purpose and at times owners assisted with their own cars at nominal rates.

The attached Dusting Chart (annexure 4) which summarises the work covered by the scheme shows that 313 individual holdings, varying in size from ¼ acre (smallest) to 47½ acres (largest), comprising a total of 1,632¾ acres, were dusted with the 16 dusting machines, giving an average of 102 acres per machine. This is considerably more than the average of 60 acres per machine dusted last year, but indicates fairly correctly the potential for a single machine in a scheme of this kind where scattered plantations of small acreage have to be dusted with not more than 3 to 4 hours' dusting a day. Larger extents could be dusted provided the holdings are closely situated or consist of larger units, as evidence of which we have the 2 machines at Dodanpapitiya and Kuruwita which actually dusted 152¾ and 128½ acres respectively.

The total of 1,632¾ acres is the largest acreage of smallholdings hitherto dusted in Ceylon in one season, although it is but a small fraction of the smallholdings adversely affected by Oidium annually.

The number of holdings in a single group varied from 8 to 32 according to their acreage, situation, demand from owners etc. Of the 1,632¾ acres dusted, 1,325½ acres were budded Rubber, 48½ acres clonal seedling Rubber and 258¾ acres ordinary seedling Rubber.

Costs

The over-all cost per acre, according to substantially correct figures obtained from Group Organisers, averages Rs. 17.97. This includes everything except the cost of machines and departmental supervision, and represents a very reasonable figure for this type of dusting. By comparison, the cost in 1955, when the work was carried out throughout by Departmental staff, was Rs. 48.78 per acre, *including* the cost of machines and the salaries and travelling of the supervisory staff. The substantial saving in costs this year is due to the system adopted of dusting through co-operative groups, whereby expenditure on departmental supervision and travelling, transport of machines etc. was reduced. A typical set of costs in respect of the Horana Group dusted this year is given below as an example:—

Item	*Cost* Rs. cts.
Sulphur, transport charges Colombo-Horana ...	64.80
Transport of machine to holdings	250.00
108½ labourers @ Rs. 3/- for carrying machine ...	325.50
19½ gallons petrol @ Rs. 2.42	47.19
½ gallon engine oil	4.75
Repairs to machine	7.75
3 gallons kerosene oil	3.06
Total ...	703.05

No. of acres dusted	= 145		
Therefore Cost per acre	= 703.05		
	145	= Rs.	4.85
Cost of sulphur per acre		= „	12.10
Total cost per acre		= „	16.95

Results

The results of the dusting were very satisfactory and almost without exception the owners of dusted holdings testified to the marked difference in foliage on dusted as against undusted trees. Some of them even believe that they have had a definite improvement in yield during the months following refoliation as compared with the same period in previous years. Practically all dusted areas were personally inspected by the writer at the conclusion of dusting and he can vouch for the marked absence of Oidium and copious foliage on dusted holdings. Some of the 3 attached photographs taken by Mr. K. Wilson de Silva, Assistant Propaganda Officer (South), on the suggestion of the writer when the latter visited dusted holdings on 13th March, clearly indicate the marked difference in foliage between dusted trees and adjoining undusted Rubber. They also show a young seedling plant whose upper tender leaves are infected by Oidium and a close-up of a typical infected branch.

Incidence

The incidence of Oidium infection was just about the same as in 1955, *i.e.* not as severe as in the worst years but bad enough to demand serious attention, in spite of the weather this season being mainly dry and therefore not conducive to severe infection. This gives the impression that the disease is gradually spreading in most areas of Ceylon, though in varying degrees of intensity, in spite of the fact that weather conditions have not really favoured the fungus. During a season of bad weather, therefore, the disease may well assume serious proportions.

Weather

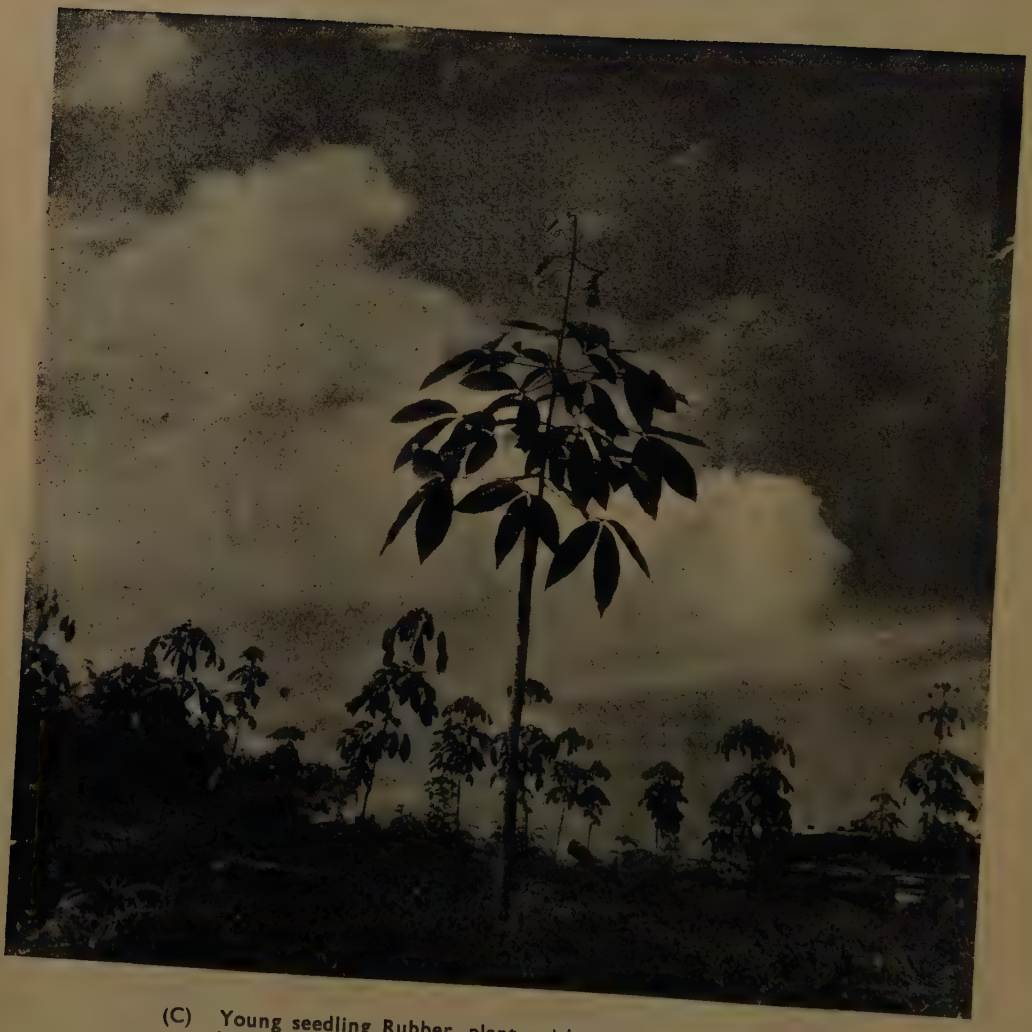
For purposes of dusting, the season was almost ideal and there were practically no interruptions from rain. The turn-out of labour and transport arrangements were staisfactory throughout, thanks mainly to the efforts of the Rubber Instructors and Group Organisers.

Significance

The dusting this year is noteworthy for solving a problem that has baffled the authorities in Ceylon ever since the control of Oidium by sulphur-dusting was established many years ago, namely that of finding a practical method of dusting smallholdings on a large scale without too severe a financial strain on either the State or the small owner. The small size of average holdings, their scattered distribution and often difficult approachability and terrain have resulted in all previous efforts, including the 1955 scheme, proving prohibitive in cost for large-scale operation mainly due to the high charges unavoidably incurred on supervision and transport in relation to the small acreage that can be dusted per day in this type of work with only 3 to 4 hours of daily dusting. The scheme, as designed and successfully carried out by the Smallholdings Department of the Rubber Research Institute this year, whereby dusting-machines were loaned by Government without charge and all other expenses were borne by units or groups of small owners on co-operative lines under suitable guidance and supervision, has presented a hopeful solution of the problem and thereby made a definite advance in the technique of successfully dusting smallholdings on a large scale. The scheme has shown that the work can be done at the very reasonable over-all cost of approximately Rs. 18/- per acre to the small-owner, which could be further reduced by extending the dusting hours per day and thereby increasing the acreage per machine. The extension of dusting time to at least 6 hours a day should be seriously considered and, in the writer's opinion, the benefits therefrom would far outweigh disadvantages, if in fact there should be any. The rather

(A) Undusted Rubber (with sparse foliage on left) and dusted Rubber with heavy foliage on right. Land felled and half cleared for replanting in foreground.

(B) Close-up of a typical Oidium-infected Rubber Branch. Note young infected leaves and numerous leaf stalks from which the leaflets have been shed due to Oidium infection.



(C) Young seedling Rubber plant with uppermost tender leaves infected with Oidium.

important question of supervision would of course arise, but the recent dusting showed that with suitable previous demonstrations and training from trained personnel like Rubber Instructors, owners could soon attain proficiency in the technique and there is no reason why, in time to come, interested owners cannot carry out the work properly on co-operative lines independently of official supervision. Owners who have dusted one year would know all about it the next year and new owners in the same group could benefit by their experience. It is after all reasonable to expect an owner, in his own interests, to see that his land is properly dusted and that the sulphur for which he has paid good money is not just blown into the air.

Moreover by providing such dusting facilities to small owners as were offered in the present scheme, in gradually increasing quantity (by supplying extra machines) according to the demand, the State would be fulfilling its responsibilities to the small owner who cannot afford his own dusting machine and thereby also help the second most revenue-earning industry in the country.

Staff

It is a pleasure to record the consistently excellent work done by the 16 Rubber Instructors, 4 District Field Officers and 2 Assistant Propaganda Officers of this Department who were in charge of the dusting. But for their tireless efforts in the difficult task of organising dusting groups, training group personnel and watching proceedings throughout, the scheme is not likely to have been the success it was. The work entailed regular early rising, often at 4 a.m., for several weeks and at no time was there any slackness or grumbling. Gate Muhandiram A. D. S. Jayasinghe, former member of the Rubber Research Board representing smallholders and Chairman of the Kalutara District Middle-Class Planters' Association, several lands of whose members were included in the scheme, writes as follows in his letter dated 23-3-56 to the writer at the conclusion of dusting:—

> "I have to state that the dusting of my land was done to entire satisfaction and I find an excellent foliage when compared with the undusted areas in the neighbourhood. I wish to inform you that all the members of our Association who got their lands dusted are fully satisfied and are very thankful to you and your staff.
>
> I wish to place on record the trouble and the keen enthusiasm taken by Mr. K. P. Siriwardane, Rubber Instructor, Migahatenne in this connection and as I believe this is the largest dusting scheme for 1956, he deserves a commendation in his personal file as an encouragement to the other Rubber Instructors.
>
> I hope you will suggest to the Board a subsidised dusting scheme for the small-holders. This will increase the revenue of Government as well as the poor small-holders and the Rubber Research Institute."

It would be correct to say that all officers engaged in the scheme, and not merely the particular Instructor mentioned, did their work equally well.

Observations

In conclusion perhaps a few observations should be made. The choice of the correct type of Group Organiser is important. He should be keenly interested in the work and have the leisure and influence. He should be a person whom the other owners trust. A keen Organiser, with necessary advice from the Rubber Instructor, could on his own make a complete success of the dusting of his group, whereas a

disinterested Organiser would mean that all the work would fall on the Rubber Instructor, whose services for subsidy replanting and other normal duties would be lost for several months. Owing to the marked benefits of dusting seen by smallholders in several Rubber districts this year, there is likely to be an increasing demand for similar facilities in the future and the best way to provide them without encroaching too much on the time of departmental staff would be to make the owners increasingly independent of their help.

It has been suggested that apart from the free provision of machines, the Government should, in the case of smallholders of under 10 acres, subsidise part of the costs of dusting which amounted to about Rs. 18/- per acre this year. This, however, is a matter for the authorities concerned to decide.

In future years it should be made clear at the outset that all owners must adopt the recommended complete treatment and accept the ruling of the authority conducting the work in the event of any disagreement in their group. There was, this year, a case where one owner caused some trouble by insisting on his holding being dusted first on each dusting day, and another stopped dusting at the 4th dusting saying that the disease was sufficiently arrested. Although in the latter case it was claimed that the full quota of sulphur allocated for 5 dustings was used during the 4 dustings, there is a possibility in such cases of owners trying to save part of the sulphur for use on another of their lands near by.

Both the Kestrel and Mistral IIA machines proved suitable for the work and gave no trouble. The Kestrel was about 6 to 8 lbs. lighter in weight (without sulphur) and was carried by 2 men whereas the Mistral usually needed 4. The latter threw the sulphur a little higher than the Kestrel and was, therefore, more useful on tall seedling trees. Taken all-round the Kestrel seems to have the advantage in view of its lower cost and lighter weight.

Annexure 1.

DUSTING LEAFLET A.

25th September, 1955

SCHEME FOR SULPHUR DUSTING SMALL HOLDINGS IN 1956

In the light of information gathered from the Sulphur Dusting Trial carried out in the Kegalla District in early 1955, Government has decided to launch an enlarged scheme for dusting smallholdings in 1956, provided there is adequate demand from Rubber small owners.

Very satisfactory results in controlling Oidium were obtained at the Kegalla trial in 1955 and the intention of the present scheme is "to assist" small owners in Oidium-infected districts to control the disease by providing facilities which they cannot afford, but to let them do the dusting themselves on a co-operative basis and bear part of the expenses.

For this purpose 12 sulphur-dusting machines will be issued on loan during the dusting season January-March, 1956 to 12 "Groups" of Rubber small-holders who wish to have their holdings dusted. Groups should be formed by the small-holders themselves who should consult their local Rubber Instructor for further particulars, (see list of Instructors at end).

Each "Group" should consist of owners of Rubber small-holdings of under 30 acres that are situated within the dustable range of one dusting-machine. The number of holdings that can be dusted with one machine will depend on their situation, distance apart and acreage. Rubber Instructors should be consulted on this point. Dusting should commence daily as early in the morning as possible (not later than 6-30 a.m.) but it should not continue after 9-30 a.m. if optimum results are to be obtained. Each holding must receive one dusting each week. A total of 5 or 6 dustings is usually required during the season, using about 12 lbs. of sulphur per acre per dusting.

Transport of machine between holdings (best done by hiring car) and labour for carrying machine during dusting must be arranged and paid for by the members of each Group on a share basis. They will also bear the costs of sulphur, petrol and oil for machine, and all other incidental expenses. Suitable dusting sulphur can be supplied at cost price to each Group by the undersigned on payment.

Dusting machines will be supplied free of cost but the members of a Group will be held responsible for its care, proper usage and safe return. Preliminary instructions and demonstrations in sulphur-dusting and use of machine will be given to each Group by the field staff of the Smallholdings Department, who will also personally supervise the commencement of dusting in each Group and thereafter keep an eye on the progress of work as their other duties permit; but the members of the Group must themselves be responsible to see that dusting of their holdings is carried out properly and according to instructions.

On receipt of applications, machines will be allocated to Groups at the discretion of the undersigned in the order received and with due regard to other necessary considerations. Various factors regarding the practicability of dusting holdings in relation to their situation and within the permitted dusting hours have to be considered and no assurance can be given that all applicants will receive machines. Preference will be given to Groups composed of owners of under 30 acre holdings, but failing that Groups consisting of larger estates (up to 100 acres) will be considered. Each member of a Group who wants his holding dusted must fill up and sign the prescribed "Application Form B" and hand it to the Organiser of his Group, to be checked and forwarded to the undersigned, through the nearest Rubber Instructor, together with the individual applications of all the other members of the Group. The Organiser should collect all the applications of his Group and forward them with a covering letter from himself stating the number of applications etc. All applications must reach the undersigned not later than 15th November, 1955.

A "deposit" of Rs. 15/- per acre must be paid by each member immediately on being informed that his Group has been accepted for dusting. This money will be set off against the value of sulphur supplied. If the full deposit money due from a Group is not received within 10 days of being called upon to pay, the dusting machine will be allocated to the next Group in the list.

It is suggested that owners in a given area or village who wish to form a dusting Group should immediately summon a meeting of those interested and invite the nearest Rubber Instructor, District Field Officer or Assistant Propaganda Officer, who could explain any further details of the scheme. They could then elect one of their number to be the "Organiser", who, on behalf of and in consultation with his Group, could attend to correspondence, make payments, order sulphur, take charge of machine, arrange training demonstrations etc. The entire scheme has to be worked out and finalised by the middle of November, 1955, so that prospective Groups should get busy immediately.

Apart from the Kegalla District where, owing to the success of the last dusting trial, small owners are very keen on sulphur-dusting, it is hoped that Groups will be formed in the Kalutara, Ratnapura and Kelani Valley (or Galle) areas.

The weight of the dusting machine with container full of sulphur is about 125 lbs. Anyone wishing to see a machine can do so by writing to the undersigned.

The cost of sulphur will be about Rs. 475/- per ton F.O.R. Colombo. It is suggested that each Group purchases the total requirements of its members through the undersigned. Any balance due on the sulphur and its transport in excess of the required "deposit", must also be remitted in advance.

W. I. PIERIS,
Smallholdings Propaganda Officer.

Smallholdings Department, R.R.I.,
33, Clifford Place, Colombo 4.

Further particulars regarding this Scheme could be obtained from any of the following field officers of this Department:—

1. Mr. H. H. Peiris, Assistant Propaganda Officer, Dehigahapitiya, Getahetta.
2. Mr. K. Wilson de Silva, Assistant Propaganda Officer, 97 De Alwis Place, Kalutara(S).
3. Mr. D. E. A. Abewickrema, District Field Officer, Buluruppe, Hettimulla.
4. Mr. B. D. Pedrick, District Field Officer, 19 Inner Circular Road, Ratnapura.
5. Mr. D. R. Ranwala, District Field Officer, Baddegama.
6. Mr. P. S. G. Cooray, District Field Officer, "Nandana", Eluwila, Panadura.
7. Mr. R. B. Madawala, Rubber Instructor, Kal-Eliya.
8. Mr. J. D. S. Wickremaratne, Rubber Instructor, Ambanpitiya.
9. Mr. R. Gunadasa, Rubber Instructor, Warakapola.
10. Mr. L. L. Gunasekera, Rubber Instructor, Undugoda.
11. Mr. R. B. Heendeniya, Rubber Instructor, Nagomuwa, Rambukkana.
12. Mr. M. B. Dissanayake, Rubber Instructor, Mawanella.
13. Mr. W. S. Dassanayake, Rubber Instructor, Galagedera.
14. Mr. S. C. Rajasinghe, Rubber Instructor, Nivitigala.
15. Mr. W. M. D. Wijesundera, Rubber Instructor, Pelmadulla.
16. Mr. W. D. Banda, Rubber Instructor, Hidellana, Ratnapura.
17. Mr. W. D. Abeysena, Rubber Instructor, Wilegoda, Eheliyagoda.
18. Mr. D. A. Welatantiry, Rubber Instructor, Atulugama, Dehiowita.
19. Mr. L. A. Wijesinghe, Rubber Instructor, Kosgama.
20. Mr. W. D. Jayawardane, Rubber Instructor, Ruanwella.
21. Mr. E. de Alwis Gunatillake, Rubber Instructor, Urugala, Ingiriya.
22. Mr. A. D. C. Perera, Rubber Instructor, Akuressa.
23. Mr. P. R. Nonis, Rubber Instructor, Kamburupitiya.
24. Mr. A. Suriyaaracci, Rubber Instructor, Hiniduma.
25. Mr. W. G. Victor de Silva, Rubber Instructor, Talgampola.
26. Mr. J. H. Suaris, Rubber Instructor, Horangalla, Talgaswela.
27. Mr. M. D. Albert, Rubber Instructor, Hattaka, Pitigala.
28. Mr. K. P. Siriwardane, Rubber Instructor, Migahatenna.
29. Mr. P. B. Fernando, Rubber Instructor, Agalawatta.
30. Mr. R. G. Siripala, Rubber Instructor, Nivitigalakele, Matugama.
31. Mr. B. A. Gurusinghe, Rubber Instructor, 170 Horana.
32. Mr. W. A. de Silva, Rubber Instructor, Tunbowila, Piliyandala.
33. Mr. M. T. F. Perera, Rubber Instructor, Wataraka, Meegoda.
34. Mr. M. D. M. Gunawardane, Rubber Instructor, "Viola Nivasa", Talangama North, Talangama.
35. Mr. A. P. Gunatilake, Rubber Instructor, Palugama, Dompe.
36. Mr. D. R. Wijesuriya, Rubber Instructor, Bendiyamulla, Gampaha.
37. Mr. K. A. M. Perera, Rubber Instructor, 650 Galle Road, Wadduwa.
38. Mr. Q. B. Marambe, Rubber Instructor, "Abaya Niwasa", Nagoda, Kalutara South.

The following are temporary Rubber Instructors who may be transferred from time to time:—

1. Mr. V. Wijesinghe, Rubber Instructor, C/o Mr. R. Gunadasa, Rubber Instructor, Warakapola.
2. Mr. S. K. Navaratne, Rubber Instructor, C/o Head Master, C.M.S. School, Kegalla.
3. Mr. D. J. Ratnayake, Rubber Instructor, C/o Mr. W. D. Banda, Rubber Instructor, Hidellana, Ratnapura.
4. Mr. L. D. Thambugala, Rubber Instructor, C/o Mr. W. D. Jayawardane, Rubber Instructor, Ruanwella.
5. Mr. G. Weeratunga, Rubber Instructor, Batapola.
6. Mr. A. K. Jayatissa, Rubber Instructor, C/o Mr. R. G. Siripala, Rubber Instructor, Nivitigalakele, Matugama.
7. Mr. C. Wickremanayake, Rubber Instructor, C/o Mr. B. A. Gurusinghe, Rubber Instructor, 170 Horana.

1956 SULPHUR DUSTING SCHEME FOR SMALLHOLDERS

APPLICATION FORM B.

I wish to have my small-holding/estate sulphur-dusted in terms of Dusting Leaflet A of 25th September, 1955. I am prepared to contribute my share of expenses as a member of my "Group" and to remit the deposit of Rs. 15/- per acre to the Smallholdings Propaganda Officer, 33 Clifford Place, Colombo 4, within 10 days of being called upon to do so.

Particulars of my land which is to be dusted are as follows:—

1. Group to which applicant belongs:.....
2. Name and full Postal Address of applicant:.....

   .....
3. Registered No. of Land under the Rubber Control Ordinance .....
4. Name of Land:.....
5. Acreage to be dusted:.....
6. Whether Budded or Seedling Rubber:.....
7. Situation (Village and District):.....
8. Lie of Land (Steep, undulating or flat):.....
9. Distance to land from nearest town and whether land can be reached by motor vehicle; if not, state how many miles it is necessary to walk .....
10. Distance from next nearest holding to be dusted in the Group .....
11. Is Sulphur required from the Dept.:.....
12. Is it to be transported from Colombo by applicant or by the Dept. at applicant's cost .....

.....
Land Owner's Signature

Date.....

Annexure 3.

This agreement made and entered into this day of December One thousand nine hundred and fifty five between The Small Holdings Propaganda Officer of the Rubber Research Institute of Ceylon, acting for and on behalf of The Rubber Research Institute of Ceylon, Agalawatta, (hereinafter called and referred to as the party of the first part) and of (hereinafter called and referred to as the party of the 2nd part) on his own behalf and on behalf of the Group of which he is the organiser.

The party of the 1st part shall supply one Sulphur Dusting Machine valued at approximately Rupees as a loan to the party of the 2nd part for the purpose of sulphur dusting the rubber lands of members of the Group of which the party of the 2nd part is the Organiser.

The sulphur dusting should be done by the party of the 2nd part during the dusting season, namely December 1955 to March 1956, or such further date as may be required or advised by the party of the 1st part.

The machine shall be used solely for the purpose of sulphur dusting of rubber lands belonging to members of the Group of which the party of the 2nd part is the Organiser.

The party of the 2nd part shall use and maintain the machine carefully. If any repairs are necessary to be done on the machine the party of the 2nd part shall hand it over to the party of the 1st part to have the necessary repairs done.

The party of the 2nd part shall return the machine in good condition to the party of the 1st part after dusting is completed in March 1956 or such extended date as may be required or as advised by the party of the 1st part.

If the machine is not returned on the due date as aforesaid the party of the 1st part shall have the power to take immediate possession of the said machine from the party of the 2nd part.

If the machine is not returned on the due date as aforesaid the party of the 2nd part shall be liable to pay a sum of Rs. 5/- per day as a fine for such default.

Small Holdings Propaganda Officer
Rubber Research Institute
of Ceylon

Group Organiser.

Witness: 1.

2.

RUBBER RESEARCH INSTITUTE OF CEYLON

Minutes of the 141st meeting of the Rubber Research Board held at the Head Quarters of the Planters' Association of Ceylon, Colombo, at 2-15 p.m. on Wednesday 21st December, 1955.

Present:—Mr. S. Pathmanathan (in the Chair), Senator Thomas Amarasuriya, Mr. H. Cole Bowen, Mr. W. P. H. Dias, J.P., Mr. Errol Jayawickrame, J.P., Mr. B. Mahadeva (Rubber Controller), Dr. W. R. C. Paul (Acting Director of Agriculture), Mr. C. A. de Silva (Acting Director), and Mr. C. D. de Fonseka (Administrative Secretary).

Apologies for absence were received from Mr. R. H. Wickramasinghe (Deputy Secretary to the Treasury) and Mr. G. H. Dulling.

1. Board:

The Chairman reported the following changes in membership.

(*a*) Mr. R. H. Wickramasinghe, Deputy Secretary to the Treasury had resumed his seat on return from leave with effect from 30-10-55 relieving Mr. W. J. A. Van Langenberg, who had acted for him.

(*b*) Mr. B. Mahadeva, Rubber Controller, had resumed his seat on return from leave with effect from 17-11-55, relieving Mr. D. C. L. Amarasinghe who had acted for him.

(*c*) Senator Thomas Amarasuriya, O.B.E., had been nominated to represent the Senate for a period of 3 years with effect from 7-11-55 in the place of Senator C. F. W. Wickramasinghe.

Senator Amarasuriya was welcomed to the Board and Messrs. Van Langenberg and D. C. L. Amarasinghe were thanked for their services.

2. Minutes:

Draft minutes of the meeting held on 24th October, 1955, which had been circulated to members, were signed by the Chairman.

3. Administrative Committee:

The recommendations and resolutions made at the meeting of the Committee held on 1st December, 1955, as embodied in C.P. 1922, were approved and it was agreed that the recommendations may now be implemented.

In connection with item 5(*c*) 'Smallholdings Sulphur Dusting Scheme 1956' the Chairman thanked Mr. Mahadeva on behalf of the Board for supplying 16 sulphur dusting machines for the dusting scheme and also commended the very good work done by the S.H.P.O. in connection with the inauguration of the scheme.

Mr. W. P. H. Dias, J.P., came into the meeting at this stage.

4. Reports and Accounts:

(*a*) *Auditor General's report for* 1954—This was adopted and covering sanction was granted for expenditure incurred in excess of the estimates amounting to Rs. 12,877.05.

5. Staff:

(*a*) *Post of Director*—All applications received were considered and it was decided to offer the post to Dr. E. D. C. Baptist, Ph.D., (London), MSc., A.R.C.S., D.I.C., requesting him to take up duties as soon as possible after he is released by the Rubber Research Institute of Malaya.

(*b*) *Smallholdings Propaganda Officer*—As Mr. W. I. Pieris had informed the Chairman that he has decided to retire from the Institute's service at the end of his present contract in September, 1956, it was decided that the post of Smallholdings Propaganda Officer be advertised immediately. The Board recorded its appreciation of Mr. Pieris' work during his long period of service since 1930.

(*c*) *Research Asst.* (*Botany*)—Mr. L. B. Chandrasekera, Research Asst. Botany Dept., was confirmed in his appointment with effect from 2nd January, 1956 and it was agreed that arrangements be made to obtain a Colombo Plan Scholarship for his training in U.K.

(*d*) *Research Asst.* (*Agro.*)—A further two months' extension of Mr. A. J. Jeevaratnam's scholarship at the Waite Agricultural Research Institute, Australia, was approved in order to enable him to complete certain investigations undertaken by him.

6. Establishment of a rubber nursery at Hedigalla Experimental Station:

Agreed that the necessary land be made available at Hedigalla for the establishment of a 60 acre rubber nursery for the Rubber Replanting Advisory Board and that the establishment of the nursery be supervised by the Institute's officers.

7. Publications:

The following publications were tabled:—

1. Second Quarterly Circular for 1955.
2. Advisory Circular No. 56—Cover Crops.
3. —do— No. 57—Notes on Rubber Seedling Nurseries.

8. Next Meeting:

Agreed that the next meeting be held after the date of arrival of Dr. Baptist is known.

The Chairman wished members a happy Christmas and a prosperous New Year.

The meeting terminated with a vote of thanks to the Chair proposed by Mr. Cole-Bowen.

RUBBER RESEARCH INSTITUTE OF CEYLON

Minutes of the 142nd meeting of the Rubber Research Board held at the Head Quarters of the Planters' Association of Ceylon, Steuart Place, Colombo, at 2-15 p.m. on Tuesday 28th February, 1956.

Present:—Mr. S. Pathmanathan (in the Chair), Senator Thomas Amarasuriya, O.B.E., Mr. G. H. Carter, Mr. W. P. H. Dias, J.P., Mr. G. H. Dulling, Mr. Errol A. Jayawickrema, J.P., U.M., Major T. F. Jayewardene, Dr. A. W. R. Joachim, (Director of Agriculture), Mr. B. Mahadeva, (Rubber Controller), Mr. R. H. Wickremasinghe (Deputy Secretary to the Treasury), Dr. E. D. C. Baptist, (Director) and Mr. C. D. de Fonseka (Administrative Secretary).

1. Board:

The Chairman reported that:

(*a*) Mr. G. H. Carter had resumed his seat on return from leave with effect from 1st January, 1956 relieving Mr. H. Cole-Bowen who had acted for him.

(*b*) Dr. A. W. R. Joachim, Director of Agriculture, had resumed his seat with effect from 10th January, 1956, relieving Dr. W. R. C. Paul, Acting Director of Agriculture, who had acted for him.

A vote of appreciation of Mr. Cole-Bowen's services was passed.

2. Minutes:

Draft minutes of the meeting held on 21st December, 1955, which had been circulated to members, were signed by the Chairman.

Major T. F. Jayewardene came into the meeting at this stage.

3. Administrative Committee:

The recommendations and resolutions made by the Administrative Committee at its meeting held that morning were approved.

Mr. G. H. Dulling came into the meeting at this stage.

4. Reports and Accounts:

(*a*) *Receipts and Payments Account for the 4th Quarter* 1955—was approved. The Chairman drew attention to the overall financial position as disclosed by these accounts and suggested that the position be examined with particular reference to the funds required for the development of Hedigalla Experimental Station. It was agreed that the financial position be examined by the Administrative Committee at its next meeting.

(*b*) *Audit of Accounts*—It was reported that the Minister of Agriculture and Food had approved the appointment of a firm of professional auditors such as Messrs. Ford, Rhodes, Thornton & Co., to audit the Institute's accounts in place of the Auditor General, and it was agreed that the audit of the 1955 and 1956 accounts be entrusted to Messrs. Ford, Rhodes, Thornton & Co.

5. Staff:

(*a*) *Director*—It was reported that Dr. E. D. C. Baptist, Ph.D. (London), M.Sc., A.R.C.S., D.I.C., had arrived in Ceylon on 19th February and had assumed duties as Director.

Dr. Baptist was authorised to sign cheques on the Institute's bank accounts.

(*b*) *Plant Pathologist*—It was reported that Dr. A. Riggenbach had reported at the Commonwealth Mycological Institute, London, on 1st December and had arrived in Ceylon and assumed duties at Dartonfield on 23rd December, 1955.

(*c*) *Agronomist*—It was reported that Mr. D. H. Constable had returned from leave and resumed duties as Agronomist on 1st February, 1956.

(*d*) *Assistant Staff*—Changes in staff since the last meeting were reported and approved.

6. Training of temporary Supervisors and Overseers for land Commissioner:

In response to a request from the Land Commissioner, it was agreed that a short practical training in rubber planting be provided to temporary Supervisors and Overseers of his department.

A Sub-Committee was appointed to consider the matter in detail and work out a suitable course of training.

7. London Advisory Committee:

Draft Minutes of the 63rd meeting of the Committee and Draft Minutes of the 8th meeting of the Agricultural Sub-Committee—were tabled.

8. Next Meeting:

It was agreed that the next meeting of the Board be held at 2-15 p.m. on 19th March, and that Professor G. E. Blackman of the University of Oxford, who was expected to arrive in Ceylon shortly, be invited to attend the meeting.

The meeting then terminated.

RUBBER RESEARCH INSTITUTE OF CEYLON

Draft Minutes of the 143rd meeting of the Rubber Research Board held at the Head Quarters of the Planters' Association of Ceylon, Steuart Place, Colombo, at 2-15 p.m. on Monday 19th March, 1956.

Present:—Mr. S. Pathmanathan (in the Chair), Senator Thomas Amarasuriya, O.B.E., Mr. G. H. Carter, Mr. G. H. Dulling, Mr. Errol Jayawickrame, J.P., U.M., Mr. W. P. H. Dias, J.P., Mr. B. Mahadeva (Rubber Controller), Mr. R. H. Wickremasinghe (Deputy Secretary to the Treasury), Dr. E. D. C. Baptist (Director) and Mr. C. D. de Fonseka (Administrative Secretary).

The following were also present by invitation:

Professor G. E. Blackman, Prof. of Agriculture at University of Oxford and Member of London Advisory Committee.

Sir Sangarapillai Pararajasingham, Chairman, Ceylon Institute of Scientific and Industrial Research.

Mr. R. H. de Mel, Chairman of The Ceylon Oils and Fats Corporation.

Dr. Francis Godwin, Director, Ceylon Institute of Scientific and Industrial Research.

Dr. A. Sundaralingam, Chief Research Officer, Ceylon Institute of Scientific and Industrial Research.

An apology for absence was received from Dr. A. W. R. Joachim, Director of Agriculture.

The Chairman introduced Dr. Blackman, Professor of Agriculture at the University of Oxford and member of the London Advisory Committee for Rubber Research (Ceylon and Malaya), who was on his way to Malaya on a special assignment as Chairman of a Committee appointed to consider the long-term development of the natural rubber industry.

Professor Blackman expressed his pleasure at the opportunity afforded to him of meeting the members of the Board and the visitors who were present. The Committee of which he was Chairman would examine the possibilities of improving research and development of the natural rubber industry in its competition with the synthetic product. Synthetic rubber was now being produced to meet a variety of uses and it was necessary that research on natural rubber should be intensified to meet the competition of the synthetic product. Such research appeared to be necessary in such directions as the more economical production of latex and the classification of the finished product. It appeared to be necessary to achieve greater versatility for natural rubber in meeting the demands of consumers so that it may successfully face competition with the synthetic product.

Sir Sangarapillai Pararajasingham, Mr. R. H. de Mel, Dr. Godwin and Dr. Sundaralingam left the meeting at this stage.

1. Minutes:

(*a*) *Confirmation*—Draft minutes of the meeting held on 28th February, 1956, which had been circulated to members, were signed by the Chairman.

(*b*) *Matters arising from the minutes:*

1. *Training of temporary supervisors and overseers for the Land Commissioner*—The Committee's recommendation that the training should consist of about one month's practical training at Hedigalla Experiment Station followed by about two months' field work with a Rubber Instructor of the Smallholdings Department was approved.

2. *Post of S.H.P.O.*—It was noted that the selection committee had selected five candidates for interview on 11th April.

3. *Tenders for buildings*—The Chairman reported that replies had not been received from some of the tenderers indicating the difference in cost if galvanised iron is used for roofing instead of aluminium. It was left to the Chairman to accept the best tender on receipt of all the replies.

2. Reports and Accounts:

(*a*) *Chairman's and Director's reports for* 1955—were approved and it was agreed that they be printed in the usual manner together with the Balance Sheet and Auditor's Report for 1954.

(*b*) *Balance Sheet and Auditor's Report for* 1955—were approved subject to Audit.

The Chairman pointed out that the financial position at the end of the year was better than anticipated but it was necessary for the long-term position to be examined in relation to the finance available for capital development. As decided earlier, the Administrative Committee would consider the position at its next meeting and make a report.

3. Staff:

(*a*) *Technical Assistant Pathology Department*—Reported that Mr. H. L. Munasinghe, Technical Assistant of the Pathology Department, had been awarded a Colombo Plan Scholarship of six months' duration for training in laboratory technology at the Waite Agricultural Research Institute, Adelaide, Australia, and that he had left for Australia on 3rd March.

(*b*) *Additional Clerk for Head Office*—The appointment of an additional clerk to the Head Office was approved.

RUBBER RESEARCH INSTITUTE OF CEYLON

Minutes of the 144th meeting of the Rubber Research Board held at the Head Quarters of the Planters' Association of Ceylon, Steuart Place, Colombo, at 2-15 p.m. on Monday 21st May, 1956.

Present:—Mr. S. Pathmanathan (in the Chair), Senator Thomas Amarasuriya, O.B.E., Mr. G. H. Dulling, Mr. G. H. Carter, Dr. A. W. R. Joachim (Director of Agriculture), Mr. Errol Jayawickrame, J.P.,U.M., Dr. E. D. C. Baptist (Director) and Mr. C. D. de Fonseka (Administrative Secretary).

Mr. W. P. H. Dias had expressed his inability to attend.

At the commencement of the meeting the Chairman reported that he had paid a courtesy call on the new Minister of Agriculture and Food, the Hon'ble Mr. Philip Gunawardena. The Minister was keenly interested in the work of the Institute particularly in regard to the assistance given to smallholders in replanting work, soil conservation grants, etc. He suggested that the Minister be invited to Dartonfield to see the work that is being done at the Institute. Members agreed.

1. Board:

The Chairman reported that Major T. F. Jayewardena had ceased to be a member with effect from 18-2-1956 on dissolution of Parliament. A nomination to fill the vacancy had not yet been made.

2. Minutes:

Draft minutes of the meeting held on 19th March, 1956, which had been circulated to members, were signed by the Chairman.

3. Administrative Committee:

The recommendations made by the Committee at its meeting of 28th April, 1956 were approved subject to certain amendments.

4. Sub-Committees:

(*a*) *Committee for selection of Smallholdings Propaganda Officer*—The minutes of the Committee's meetings of 15th March and 11th April were adopted and it was agreed that Mr. R. T. Wijewantha B.Sc. Hons. (London) be appointed to the post which will fall vacant on the retirement of Mr. W. I. Pieris.

(*b*) *Salaries Committee*—The report of this Committee was considered and it was agreed that the salary scales recommended for new entrants be adopted with effect from 1st January, 1957 subject to a few amendments.

Mr. Dulling left the meeting at this stage.

5. Receipts and Payments Account for the 1st Quarter 1956—was approved.

6. Staff:

(*a*) *Administrative Secretary*—Agreed that Mr. C. D. de Fonseka, Administrative Secretary, should have three months end of contract leave with effect from 4th June, 1956, and acting arrangements for continuation of his work during this period were approved.

(*b*) *Research Assistant, Agro. Dept.*—Reported that Mr. A. J. Jeevaratnam, Research Asst. Agro. Dept., had resumed duties on 17th May, 1956 on return from Australia on the completion of his scholarship period.

(*c*) *Assistant Staff*—Changes in Asst. Staff were reported and approved.

7. Holidays:

It was reported that 1st May and May 12th had been declared holidays for celebration of May day and Ramazan respectively. This was approved and it was agreed that these two days be included in the list of annual holidays to be given in future.

8. Technical Matters:

Arrangements made for the importation of a clone of Hevea pauciflora were noted.

9. Publications:

The following were tabled:—

(*a*) Article on "Natural rubber Research—too little and too late?"

(*b*) Advisory Circular No. 58—Notes on Budgrafting Procedure.

The meeting then terminated.

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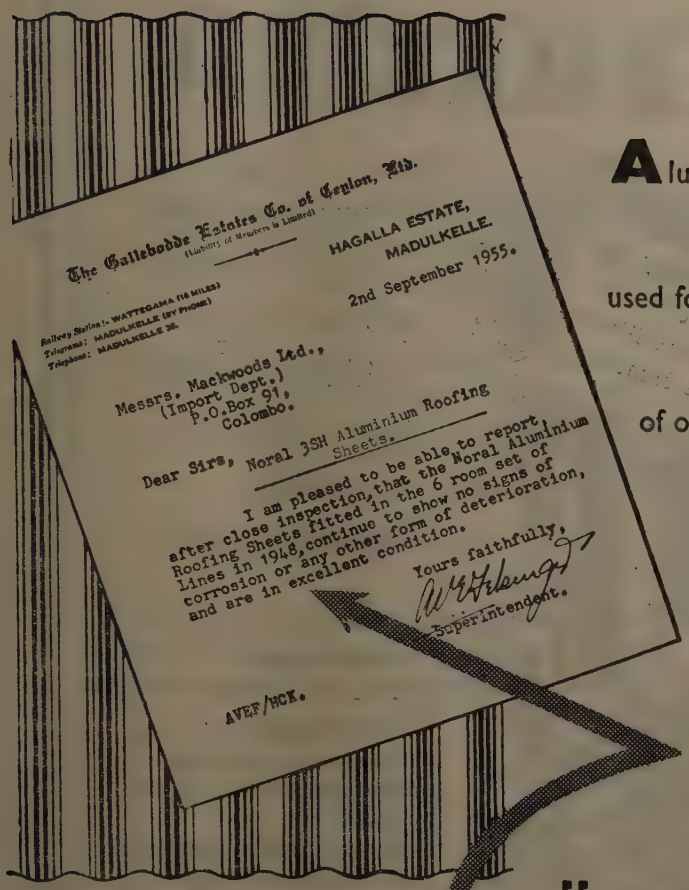

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